SAMSUNG

WASHING MACHINE
DRUM TYPE

Basic Model : WF203ANW
(MARS2 PROJECT)

Model Name : WF218ANB
WF218ANW
(FRONTIER4 PROJECT)

Model Code : WF218ANB/X**
WF218ANS/X**
WF218ANW/X**
WF219ANB/X**
WF219ANW/X*

SERVICE *Manual*

WASHING MACHINE (DRUM)

WF218ANB

WF219ANB

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2. Features and Specifications
3. Disassembly and Reassembly
4. Troubleshooting
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Refer to the service manual in the GSPN (see the rear cover) for the more information.

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1. SAFETY INSTRUCTIONS

1-1. SAFETY INSTRUCTIONS FOR SERVICE ENGINEERS

► Be sure to observe the following instructions to operate the product correctly and safely to prevent possible accidents and hazards while servicing.

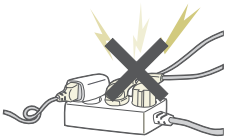
► Two types of safety symbols, Warning and Caution, are used in the safety instructions.

⚠ **WARNING**	**Hazards or unsafe practices that may result in severe personal injury or death.**
⚠ **CAUTION**	**Hazards or unsafe practices that may result in minor personal injury or property damage.**

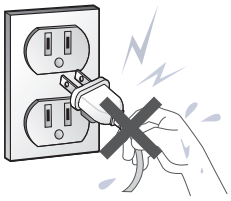
⚠ WARNING BEFORE SERVICING

- (When servicing electrical parts or harnesses) Make sure to disconnect the power plug before servicing.
  ✔ Failing to do so may result in a risk of electric shock.

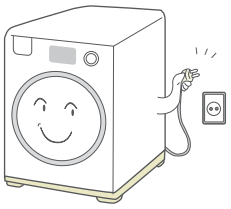
- Do not allow consumers to connect several appliances to a single power outlet at the same time.
  ✔ There is a risk of fire due to overheating.



- When removing the power cord, make sure to hold the power plug when pulling the plug from the outlet.
  ✔ Failing to do so may damage the plug and result in fire or electric shock.



- When the washing machine is not being used, make sure to disconnect the power plug from the power outlet.
  ✔ Failing to do so may result in electric shock or fire due to lightning.



- Do not place or use gasoline, thinners, alcohol, or other flammable or explosive substances near the washing machine.
  ✔ There is a risk of explosion and fire caused from electric sparks.

⚠ WARNING WHILE SERVICING

- Check if the power plug and outlet are damaged, flattened, cut or otherwise degraded.
  ✔ If faulty, replace it immediately.
  Failing to do so may result in electric shock or fire.

- Completely remove any dust or foreign material from the housing, wiring and connection parts.
  ✔ This will prevent a risk of fire due to tracking and electrical hazard..

- When connecting wires, make sure to connect them using the relevant connectors and check that they are completely properly.
  ✔ If tape is used instead of the connectors, it may cause fire due to tracking.

- Make sure to discharge the PBA power terminals before starting the service.
  ✔ Failing to do so may result in a high voltage electric shock.

- When replacing the heater, make sure to fasten the nut after ensuring that it is inserted into the bracket-heater.
  ✔ If not inserted into the bracket-heater, it touches the drum and causes noise and electric leakage.

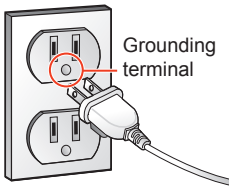
⚠ WARNING AFTER SERVICING

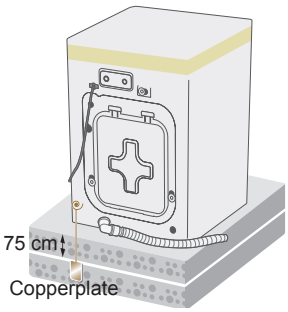
- Check the wiring.
  ✔ Ensure that no wire touches a rotating part or a sharpened part of the electrical harness.

- Check for any water leakage.
  ✔ Perform a test run for the washing machine using the standard course and check whether there is any water leakage through the floor section or the pipes.

- Do not allow consumers to repair or service any part of the washing machine themselves.
  ✔ This may result in personal injury and shorten the product lifetime.

- If it seems that grounding is needed due to water or moisture, make sure to run grounding wires.
  (Check the grounding of the power outlet, and additionally ground it to a metallic water pipe.)
  ✔ Failing to do so may result in electric shock due to electric leakage.
  [Running a grounding wire]
  - Twist a grounding wire (copper wire) two or three times around the tap.
  - If you connect the grounding wire to a copperplate, bury it 75 cm under the earth in a place with a lot of moisture.
    ⚠ Do not connect the grounding wire to a gas pipe, plastic water pipe or telephone wire. There is a risk of electric shock or explosion.



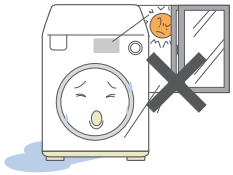


⚠ CAUTION BEFORE SERVICING

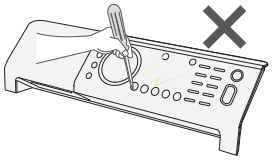
- Do not sprinkle water onto the washing machine directly when cleaning it.
  - ✔ This may result in electric shock or fire, and may shorten the product lifetime.

- Do not place any containers with water on the washing machine.
  - ✔ If the water is spilled, it may result in electric shock or fire. This will also shorten the product lifetime.

- Do not install the washing machine in a location exposed to snow or rain.
  - ✔ This may result in electric shock or fire, and shorten the product lifetime.



- Do not press a control button using a sharp tool or object.
  - ✔ This may result in electric shock or damage to the product.



⚠ CAUTION WHILE SERVICING

- When wiring a harness, make sure to seal it completely so no liquid can enter.
  - ✔ Make sure that they do not break when force is exerted.

- Check if there is any residue that shows that liquid entered the electric parts or harnesses.
  - ✔ If any liquid has entered into a part, replace it or completely remove any remaining moisture from it.

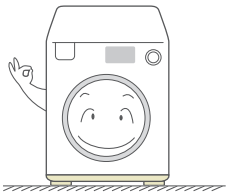
- If you need to place the washing machine on its back for servicing purposes, place a support(s) on the floor and lay it down carefully so its side is on the floor.
  - ✔ Do not lay it down on its front. This may result in the inside tub damaging parts.

⚠ CAUTION AFTER SERVICING

- Check the assembled status of the parts.
  - ✔ Now is a good time to inspect your work. Review all connections and wiring, including mounting hardware.

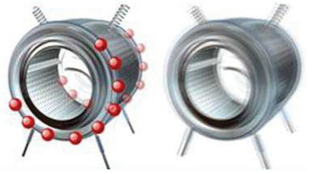
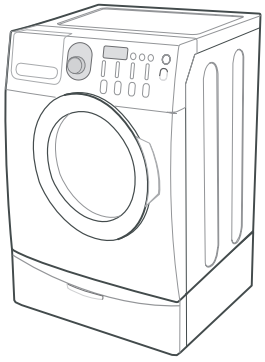
- Check the insulation resistance.
  - ✔ Disconnect the power cord from the power outlet and measure the insulation resistance between the power plug and the grounding wire of the washing machine. The value must be greater than 10MΩ when measured with a 500V DC Megger

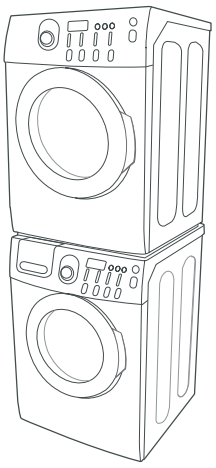
- Check whether the washing machine is level the floor with respect to the original position of the washing machine prior to service.
  By doing this now will reduce for the need of customer dissatisfaction and redo call.
  - ✔ Vibrations can shorten the lifetime of the product.



2. FEATURES AND SPECIFICATIONS

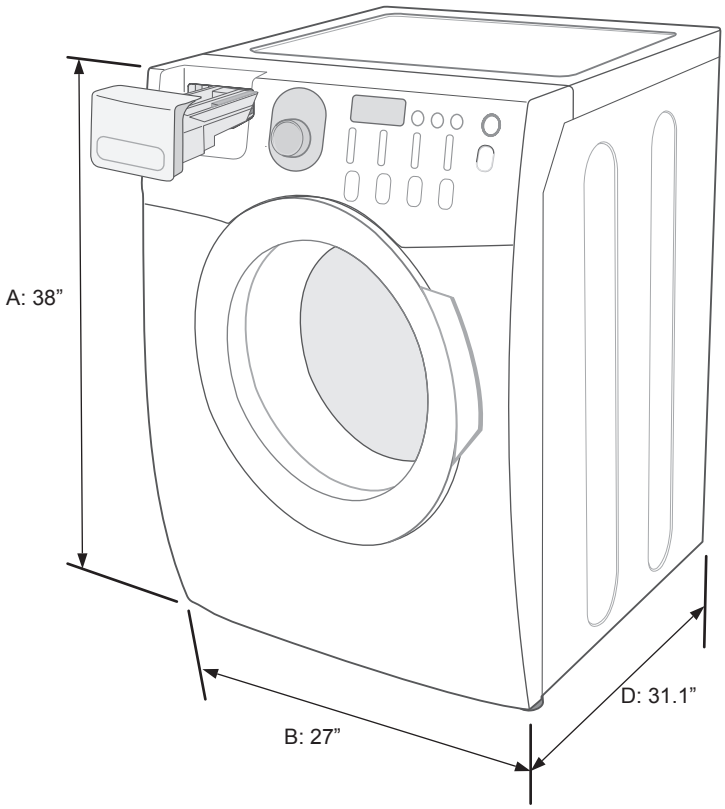
2-1. FEATURES

Features	Description
Ball Balance	• Counterbalances the washer and provides low-vibrations and low-noise. - Ball Balance: Counterbalances the drum that spins during washing. - Spins the drum directly with the upgraded DD motor → noise and vibrations are minimized.  Hauzen Drum Venus Style Normal Drum Washing Machine
Extra Large Capacity	Even bulky garments and blankets get super clean. The large 3.8 cu.ft. capacity leaves enough room for a more thorough, cleaner wash.
Direct Drive Inverter Motor	The power to handle anything! Our direct-drive inverter motor delivers power right to the washer tub from a variable speed, reversible motor. A beltless direct-drive motor generates a higher spin speed of 1,150rpms for more effective, quiet operation. The washer also has fewer moving parts.
Woolmark Certified	The machine wash wool cycle on the Samsung machines has been tested and passed the required Woolmark Company specification for machine washable wool products. Fabrics should be washed according to the instructions on the garment label as specified by Woolmark and Samsung.
Pedestal with Storage Drawers Model No : WE357A7W/S/R/L/G	An optional 15” pedestal is available to raise the washer for easier loading and unloading. It also offers a built-in storage drawer that can hold a 100 oz. bottle of detergent 

Features	Description
Stacking Model No : SK-3A1/XAA SK-4A/XAA	Samsung washers and dryers can be stacked to maximize usable space. An optional stacking kit is available for purchase from your Samsung retailer. 

2-2. SPECIFICATIONS

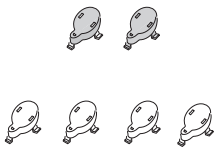
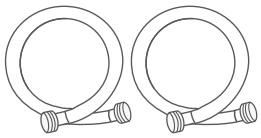
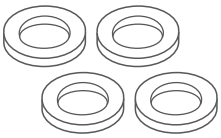
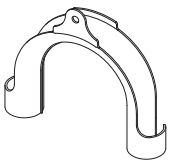
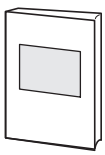
TYPE	FRONT LOADING WASHER		
DIMENSION (Inches / cm)	A. Height-Overall	38” / 96.5 cm	
	B. Width	27” / 68.6 cm	
	C. Depth With Door Open 90°	49.2” / 125 cm	
	D. Depth	31.1” / 79 cm	
WATER PRESSURE		50kPa ~ 800kPa (7.25psi ~ 116 psi)	
WEIGHT		93 kg	
CAPACITY		3.8 cu.ft	
POWER CONSUMPTION	WASHING	120V	226W
	WASHING AND HEATING	120V	997W
	SPIN	120V	379W
	DRAIN	120V	41W
SPIN REVOLUTION	WF218	1150 rpm	



2-3. COMPARING SPECIFICATIONS WITH EXISTING MODELS

Grade			WF218* (WF219*)	WF203*
Image				
Main Spec	Capacity (Cu.ft. IEC)		3.8 cu.ft	3.4 cu.ft
	Motor type		DD Motor	Belt
	MAX RPM		1150	1000
	VRT™		Yes	-
	Steam		-	-
	SilverCare		-	-
	Diamond Drum		-	-
	Heater		Yes	Yes
	Washing Cycle #		10	7
	Temperature Level #		4 level	4 level
	Delay Wash		24 hrs delay wash	24 hrs delay wash
	Garment +		Yes	Yes
	Tilted Drum		10 degree	10 degree
Target Performance	MEF		2.2 or More	1.92
	WCF		3.8 or Less	4.3
	Annual Power Consumption (kWh/Year)		170 of Less	225
	Spin Noise (Max RPM)		54 dBA	56.5 dBA
Design	Jog Dial Location		Center	Right
	Color		B: blue sliver W: white	-
	Door	Deco	EGI Coating	-
		Cover (Rim)	Spray	Spray
	Control Display		Graphic LED	LED
	Dimension (W*D*H)		27 x 31 x 38 inch	27 x 29.5 x 38 inch

2-4. OPTIONS SPECIFICATIONS

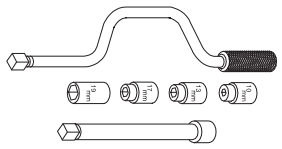
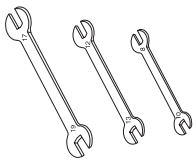
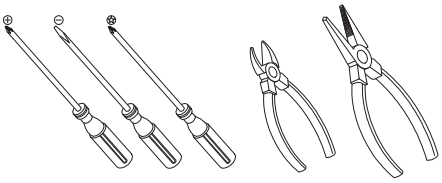
Item	Item Name	Code No.	Remark
	BOLT-SPANNER (Wrench)	DC60-40146A	Default
	CAP-FIXER	DC61-10688A (4EA) DC61-10688B (2EA)	Default
	HOSE-WATER(H)	DC62-00075A	Default
	HOSE-WATER(C)	DC62-00075B	Default
	SEAL-WATER	DC62-40178A	Default
	HOSE-HANGER	DC62-10278A	Default
	MANUAL-BOOK	DC68-02440B	Default

Note

- You can purchase additional water supply and drain hoses from a service center.
- For built-in models, the spanner (wrench), water supply and drain hoses are not supplied. Both the water supply and drain hoses are supplied during the installation.

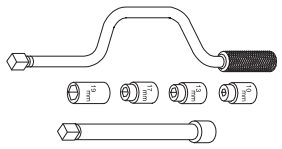
3. DISASSEMBLY AND REASSEMBLY

3-1. TOOLS FOR DISASSEMBLY AND REASSEMBLY

Tool		Type	Remarks
	Box driver	10mm	Heater(1),Tub(12), Fixer screw(5), Motor(2), Balance(9)
		13mm	Shock Absorber (2 holes each in left/right), Damper(2), Damper(friction 2)
		19mm	Pulley(1)
	Double-ended spanner	10mm 13mm 19mm	Replaced by box driver Leg
	Vice pliers		A Tool for protecting empty turning of bolt or abrasion from using box driver For disassembly of Spin drum
	Others (screwdriver, nipper, long nose pliers)		Common tools for servicing

3. DISASSEMBLY AND REASSEMBLY

3-1. TOOLS FOR DISASSEMBLY AND REASSEMBLY

Tool		Type	Remarks
	Box driver	10mm	Heater(1),Tub(12), Fixer screw(5), Motor(2), Balance(9)
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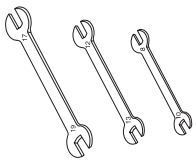
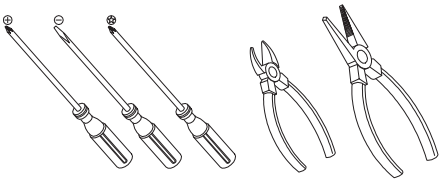
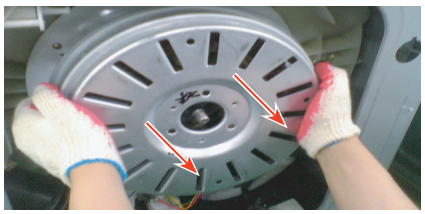
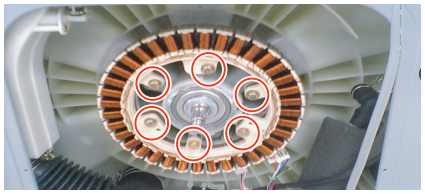
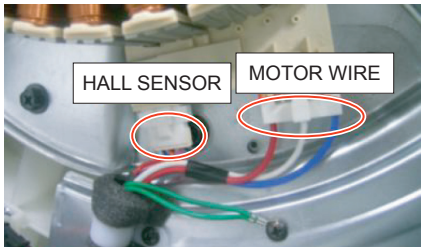
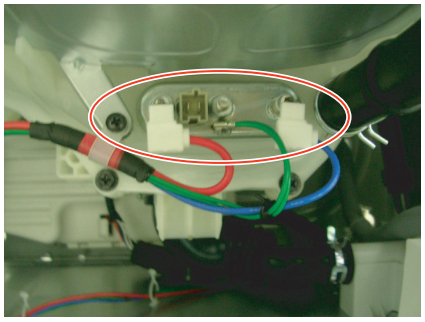
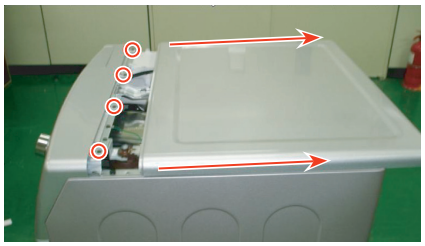
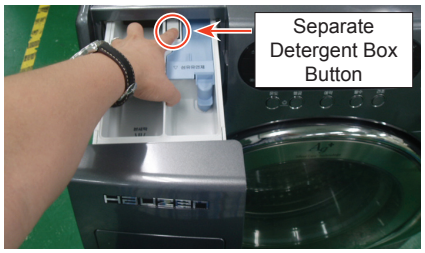
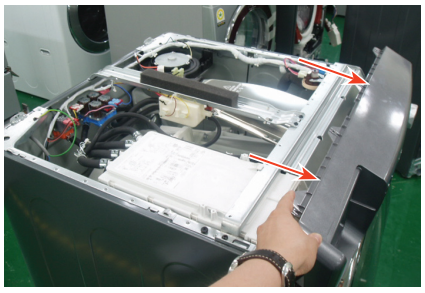
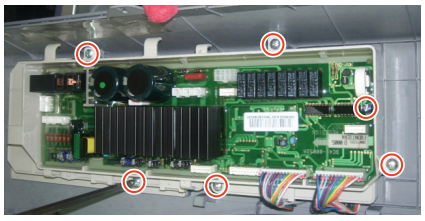
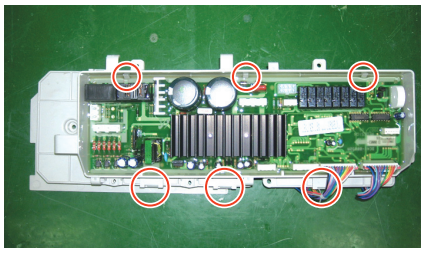
	Double-ended spanner	10mm 13mm 19mm	Replaced by box driver Leg
	Vice pliers		A Tool for protecting empty turning of bolt or abrasion from using box driver For disassembly of Spin drum
	Others (screwdriver, nipper, long nose pliers)		Common tools for servicing

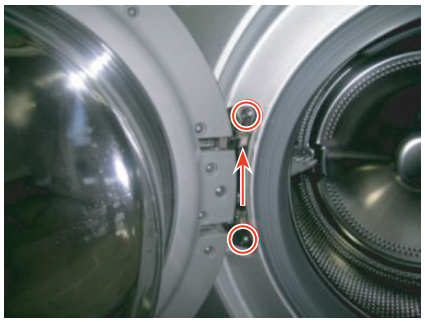
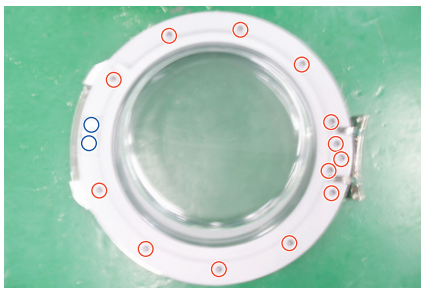
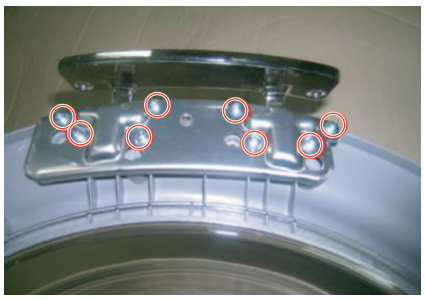
3-2. STANDARD DISASSEMBLY DRAWINGS

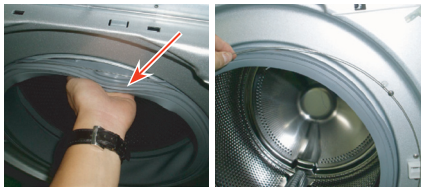
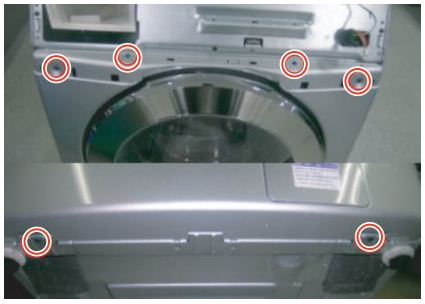
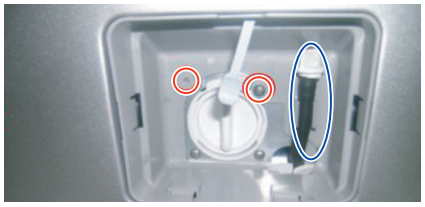
► This is a standard disassembly diagram and may differ from the actual product.
Use this material as a reference when disassembling and reassembling the product.

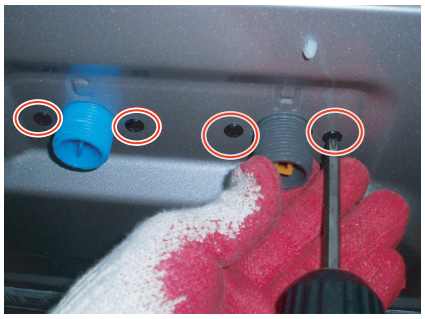
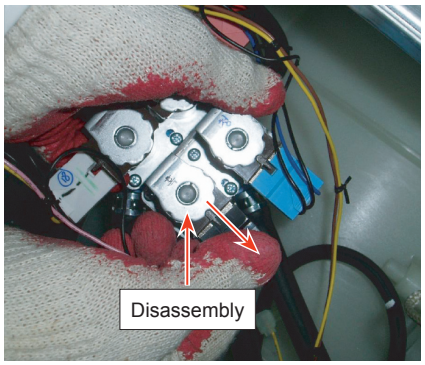
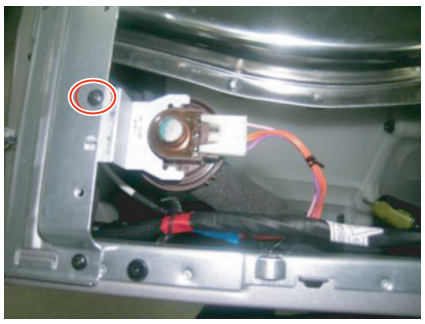
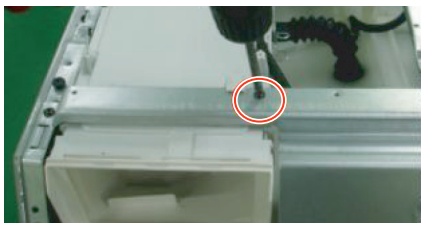
Part	Figure	Description
Disassembling and Repairing the Rear Motor		1. Remove the 2 screws holding the Back-Cover at the back of the washing machine and separate the Back-Cover pushing it downwards (Assemble it by lifting it upwards,)
		2. After separating the Back-Cover, remove the M19 nut holding the Motor. ⚠ To remove it, turn it counter-clockwise. As the Motor also rotates if the nut is turned slowly, torque it quickly and firmly in a single action. ✎ Do not remove the nut by inserting a screwdriver into the Motor, as this may result in a problem with the motor.
		3. Remove the M19 nut and washer and then separate the Rotor. ⚠ Since removing the rotor requires a lot of strength due to the magnetic force of the Rotor and it may come off suddenly, your hand or arm may be injured by the edge of the Stator or Frame. Therefore take precaution when separating it. ✎ You can separate the connector by pressing the navel of the Housing and pulling it outside.
		4. Separate the Motor Wire and Hall Sensor while pressing the navel of the Housing. Take precaution when you do this because the Hall Sensor part is easily shocked.
		5. Separate the 6 M10 screws. → Separate the Assy Bracket Motor → Separate the Stator. ✎ When removing the last of the 6 screws, hold the Stator as it may fall when the screws are removed.
	✔ Check Points for Troubleshooting 1. Check if there is any alien substance between the Rotor and the Stator. 2. Check if the motor power (Blue, White, Red) wire is connected. 3. Check if the Hall Sensor wire is connected. ✎ The order of the motor wires is Blue, White, and Red from the right. Check if the resistance between Blue-White, White-Red, and Red-Blue is equal to 15Ω.	

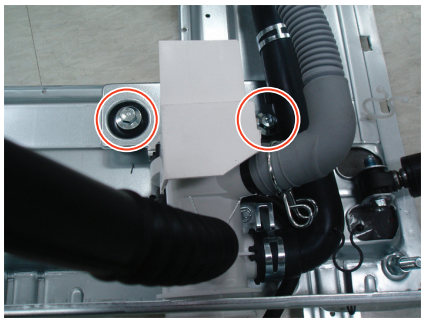
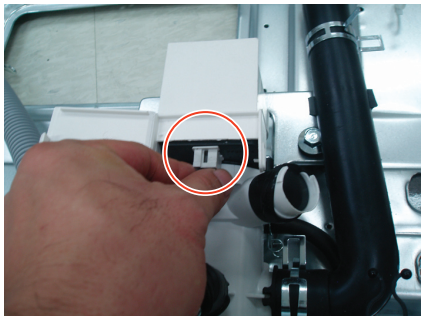
Part	Figure	Description
Separating the Heater at the Bottom Front		1. Disassemble the Front-Frame. 2. Separate the connection wire - Separate the Thermostat fixed at the bottom of the Tub. (Take precaution as there may be water remaining.) Make sure to separate the Thermostat first and then separate the Heater. If you fail to observe this order, it may result in a shock and be damaged. 3. Release the nut holding the Heater with an M10 tool and then separate the Heater. Do not completely release the nut. Pull the Heater forward after releasing the nut. If the Heater is damaged, it may cause a problem. Therefore unfasten the nut using spanner or wrench manually without using pincers or tweezers. ⚠ When you re-assembly the heater, make sure to install the Heater exactly onto the Bracket inside the Tub. If it is not properly installed, it may cause a fire. In addition, completely insert the packing part into the Tub when assembling it so that the packing part is completely attached onto the Tub.
	✔ Check Points for Troubleshooting 1. Check if the resistance of the Heater is equal to 27.1Ω (for the 1900W product), or 26.2Ω (for the 2000W product). 2. Check if the resistance of the Thermistor is equal to 12kΩ (at room temperature).	

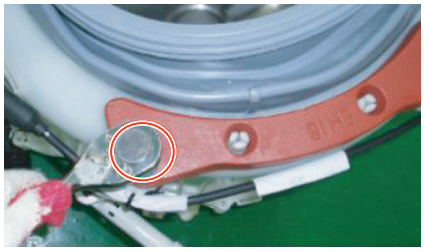
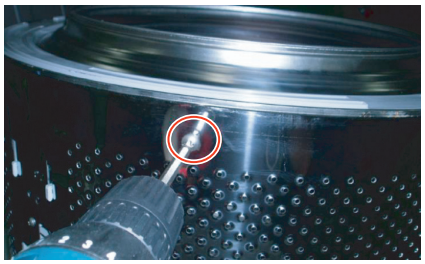
Part	Figure	Description
Separating the Top Cover and Control Panel (Check Main-PCB and Sub-PCB)		1. Remove the 2 hexagon screws, which are at the back, fixing the Top Cover.
		2. Separate the Top Cover by sliding it backwards and remove the 4 screws of the Control-Panel.
		3. Press the Separate button to separate the Detergent Box.
		4. Pull the Control Panel forwards to separate it. Tap the center of the Control Panel sliding it up to separate it. (Take care not to damage the Hook)
		5. Separate the wire connected to the Main-PCB. Remove the 6 fixing screws and separate the Ass'y PCB. Seperate Sub-PCB from Main-PCB.
		

Part	Figure	Description
Disassembling and Reassembling the Door Part		1. Separate the 2 screws holding the Hinge and the Front-Cover.
		2. Separate the Door-Assy lifting it up slightly. 3. Remove the 15 screws fixing the Door-Cover (including the 2 blue screws holding the Door-Lever.)
		4. Separate the Door-Cover and remove the 8 screws to separate the Hinge.
	✔ Check Points for Troubleshooting • Check the status of the screws holding the Hinge (check if they are loose). Check if the front and rear of the door and the hinge part are not damaged.	

Part	Figure	Description
Disassembling the Front Cover/Front Frame (Check the Door Lock S/W)		1. Pull the Diaphragm while holding the inside of the diaphragm with your hands.
		2. Remove the 3 screws to separate the switch.
		3. Remove the 4 screws at the top and the 2 screws at the bottom of the Front-Frame. To assemble, hook the Front-Cover onto the frame floor and then insert the assembly hook into the hole.
		4. Push the lever and lift it up slightly to open the Front Cover.
		5. Separate the remaining water removal hose (blue) from the hook and remove the 2 screws (red).
		6. Press the Upper-Plate slightly with the screwdriver as shown in the figure, in order to separate the Front-Frame.

Part	Figure	Description
Disassembling and Repairing the Water Supply Valve		1. Separate the Top Cover and then remove the screws fixing the water supply valve.
		2. Separate the wire connected to the valves of each of the 3 positions. You can separate each individual part only after separating the black hose.
Disassembling and Repairing the Water Level Sensor.		• Remove the screws fixing the water level sensor, and separate the wire and hose from the water level sensor at the lower part. You can replace the water level sensor.
	✔ Check Points for Troubleshooting • Check the resistance with a tester.	
Disassembling the inside Detergent Box		Separate the Top Cover, Control Panel and Detergent Box and then perform the following procedures. 1. Separate the Upper Plate and the Detergent Box screw.
		2. Hold the Clamp of the Detergent Box and disassemble the Hose-Drawer-Tub.

Part	Figure	Description
Disassembling the Pump Motor Part		1. Seperate the Front-frame and remove two M12 nuts.
		2. Separate the Clamp of the hose connected to the Drain-Motor and remove the screw.
		3. Separate the connector.
Removing the Remaining Water		• If the washing machine works, drain the water in the wash tub by selecting the Spin course. If the washing machine does not work, remove the laundry from the wash tub and scoop the remaining water out of the tub using a cup.

Part	Figure	Description
Disassembling the Tub		Disassemble the Tub when the Front and Rear Covers, the Top-Cover, and the Detergent Box are removed. 1. Two persons must hold the Tub and pull out the Tub Assy' forward to disengage the spring from the hook.
		2. Remove the 4 bolts from the front tub and separate the Weight Balancer.
		3. Remove the M10 bolt from the middle of the tub and separate the Front-Tub and Back-Tub.
		4. Separate the Drum Assy from the tub, remove the screws from the outer sides and then remove the two upper and lower ball balancers.

For reassembly, follow the disassembly steps in reverse order.

4. TROUBLESHOOTING

4-1. ERROR MODES

► **This is a washer integrated error mode. For detailed information, refer to the general repair scripts.**

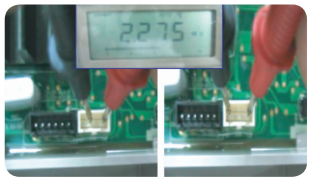
Error Type	For USA		Causes	Remarks
	LED	LCD		
Water Level Sensor	LE	Error! Water Level Sensor Problem	- The part of the hose where the water level sensor is located is damaged (punctured). - The hose is clogged with foreign material. - The hose is folded. - Too much lubricant has been applied to the insertion part of the air hose. - Hose engagement error (disengaged) - Part fault (Faulty internal soldering) - The water level sensor terminal is disengaged. - Main PBA fault.	
Motor Driving Error and Hall Sensor Error	3E	Error! The motor is not working properly.	- The PBA connector terminal is not connected. - The motor spin net is not engaged. - The motor's internal coil is damaged (short-circuited or cut) - The hall sensor terminal is not connected. - Foreign material (e.g. a screw) has entered the motor.	This error occurs because of restrained revolutions
	E3		- Motor overloaded due to too much laundry (Non-sensing) - The motor hall sensor terminal is not connected. - PBA fault - The motor driving error from the PBA is weak. : Unstable relay operation, etc.	This error occurs when an interference is generated due to too much laundry, etc.
	bE		- This occurs due to erroneous operating signals from the motor hall sensor. - The IPM terminal of the main PBA is not connected. - The DD motor cover is out of place. - The PCB housing terminal is not connected. - PBA fault - DD motor fault	
Water Supply Error	nF	Error! Low Water Pressure	- Foreign material is entering the water supply valve. - The water supply valve terminal is not connected. (Wire disconnected) - The warm water and rinse connectors are incorrectly switched with each other. - This occurs if the PCB terminal from the drain hose to the detergent drawer is not connected. Check whether the transparent hose is folded or torn.	
			- The cold and warm water supply hoses are incorrectly switched with each other. - The temperature of the water supplied through the dry valve during a dry cycle is sensed as higher than 70 ˚C.	The water supplied for 1 minute drying cycle is 0.3 ~ 0.4 L.
			- The water temperature is sensed as higher than 50 ˚C in the Wool or Lingerie courses.	
Drain Error	nd	Error! No Draining	- The pump motor impeller is damaged internally. - Wrong voltage (220 V → 110 V) is supplied to the parts. - Part fault - This occurs due to freezing in the winter season - The drain hose is clogged. (Injection error, foreign material) - The water pump terminal is not connected: rubber band, bills, cotton, hair pins, coins have collected inside the drain pump ASSY.	

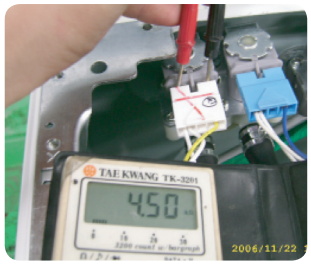
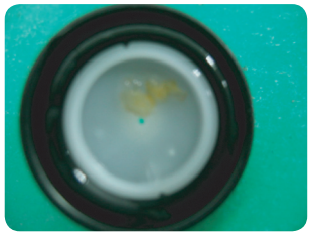
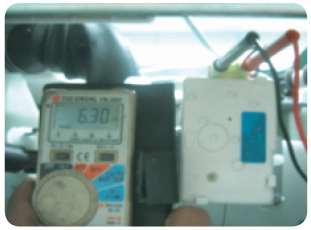
Error Type	For USA		Causes	Remarks
	LED	LCD		
Power Error	2E		- Check the consumer's power conditions. : Make sure to check the operating voltage. Connect a tester to the internal power terminals during the Boil or Dry operations and observe the washing machine's operation carefully. : Check the voltages. (An error occurs when under or over voltage is supplied.) : Check whether a plug receptacle is used. When the connecting wire is 1m, a momentary low voltage may drop up to 10 V - Main PBA fault (sometimes)	
	PF	-	- This error is not a fault but occurs during a momentary power failure : When this error code is displayed, the operation restarts from the cycle that was stopped due to the power failure. : If the washing machine is not operating and this error code is displayed, it is displayed to notify that a power failure has occurred.	
Communication Error	-		- The signals between the sub and main PBAs are not sensed because of commuication error. - Check the connector connections between the sub and main PBAs carefully. → Check for incorrect or loose connections, etc. - Remove the sub PBA C/Panel and check for any faulty soldering.	
Switch Error (Main Relay Error)	E2		- The Power button is pressed continually (for more than 12 seconds). - A switch is jammed or stuck due to be pressed unevenly due to deformation of the control panel or button. - This error may occur when the screws that hold the sub PBA in place are tightened too much. - A button other than the Power button is continually pressed (for more than 30 seconds). - Deformation of an internal plastic injection part - A screw for assembling the sub PBA is tightened too much.	
	Sr		- The main relay of the PBA is short-circuited. - The main relay terminal is connected incorrectly. (The terminal is bent and contact cannot be made.)	When the PBA motor relay does not operate

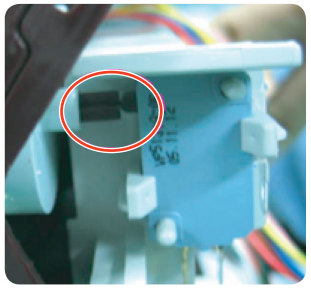
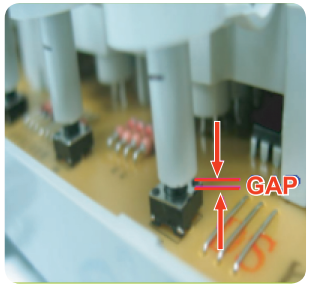
Error Type	For USA		Causes	Remarks
	LED	LCD		
Door Error	dS (Before operation)		- A switch contact error because of a deformation of the door hook - When the door is pulled by force	When the door is opened after starting operation
	dL (During operation)		- This occurs in the Boil wash because the door is pushed due to a pressure difference from internal temperature changes	When the door is not locked after the door close operation
	LO (Unlock Fail)		- The door lock switch terminal is connected incorrectly. - The door lock switch terminal is broken. - This occurs intermittently because of an electric wire leakage - Main PCB fault	
	FL (Lock Fail)			
Heater Error	Hr (Heater Relay)		- The washing heater is short-circuited or has a wire disconnected. - The washing heater in the tub has an error. (Contact error, temperature sensor fault) - If the water level sensor operates without water because water is frozen or for any other reason and the temperature sensor engaged at the bottom to prevent overheating for the washing heater detects a temperature of 100 to 150 ˚C, the washing machine turns the input power off.	If the heater has no error, this occurs because of a PBA relay malfunction.
			- This error occurs when the red temperature sensor at the center of the dry heater operates (at a temperature higher than 145 ˚C) : Corrective action – Press the button at the center lightly. The washing machine will operate normally. Alternatively, replace the temperature sensor if the temperature sensing is unstable because of functional degradation. - This occurs when the steam function does not operate normally. - This error does not occur in existing drum products. Check whether the product is a steam model	
Water Leakage Error	LE		- Heater engagement fault (out of place) - The air hose is out of place and water leakage occurs during the spin cycle. - The tub-bcak at a safety volt fixed location is broken. - Water leakage occurs at the front with foaming because of too much detergent - Water leakage occurs because the connecting hose to the detergent drawer is connected incorrectly. - The drain pump filter cover is engaged incorrectly. - Water leakage occurs at the drain hose. - Screws at the duct-condensing are worn. - The nozzle-diaphragm is engaged in the opposite direction or the rubber packaging is omitted. - Water leakage occurs because the screws that hold the tub-back or tub-front in place are fastened incorrectly. - The leakage sensor is faulty.	

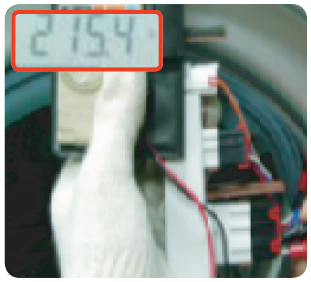
Error Type	For USA		Causes	Remarks
	LED	LCD		
Overflow Error	OE		- Water is supplied continually because the water level detection does not work. - Because the drain hose is clogged and there is an injection error (at a narrow section), the water level detection does not work and water is supplied continually. - Water is supplied continually because of freezing or because there is foreign material in the water supply valve. - This error may occur when the water level sensor is degraded.	This error occurs because the water level sensor terminal is out of place.
Temperature Sensor Error	tE		- The washing heater in the tub has an error. (Contact error, temperature sensor fault) - The connector is connected incorrectly or is disconnected. - If the water level sensor operates without water because the water is frozen or for any other reason and the temperature sensor engaged at the bottom to prevent overheating for the washing heater detects a temperature of 100 to 150 ˚C, the washing machine turns the input power off.	Heater sensor fault : When the connector is connected incorrectly or has a wire disconnected or contact error
Unbalance Error	dc		- As laundry causes this error, check the laundry. - Find the reason for the imbalance and solve it as directed in the user manual.	
Foaming Detected	SUdS		- This occurs when too much foaming is detected. It is also displayed while foaming is removed. When the removal is finished, the normal cycle proceeds. “Sud” or “SUdS” is displayed when too much foaming is detected and “End” is displayed when the removal of the foaming is finished. (This is one of the normal operations. It is an error for preventing non-sensing faults.)	
Mems PBA Error Detected	E8	-	- Error detected in the Mems PBA or data error detected. Check the wire connections. Replace if necessary. 1. Check the wire connections. 2. Replace the Mems PBA. 3. Main PBA wire connection error or PBA’s silver nano part malfunction. Replace if necessary.	

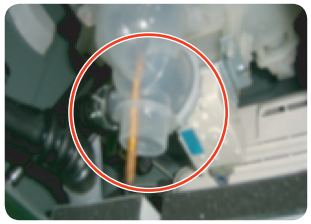
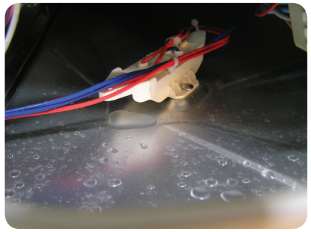
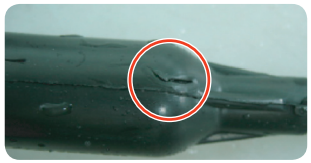
► These are common troubleshooting procedures for each drum-type washer error mode. For detailed information, refer to the general repair scripts.

Error Type	Error Mode		Causes	Corrective Actions	Description of Photo
	LED	LCD			
Water Level Sensor	LE	Error! Water Level Sensor Problem	• Water level sensor fault • Incorrect connections of the water level sensor terminal • The hose part for the water level sensor is folded. • Main PCB fault	• Check the water level sensor terminal connections and contacts. • An error occurs if an incorrect water level sensor is used. Make sure to check the material code. (Abnormal operation) • If the water level sensor is faulty, replace it. • If the error persists despite taking the action above, replace the PBA.	 Check the water level sensor frequency. - Check it after the water level sensor and the connector are connected. - Frequency: Approx. 26.4 KHz with no load
Washing Motor Error and Hall Sensor Error	3E E3 bE	Error! The motor is not working properly.	• Washing motor fault • Washing motor hall sensor fault • Incorrect connections of the washing motor/hall sensor connector • Washing motor rotor and stator fault • Main PCB fault	• Check the motor connector terminal connections and contacts. • 3E is displayed because overloading occurs due to too much laundry. • If the hall sensor terminal is faulty, replace the hall sensor. • Check whether the stator of the motor cover is damaged. • Check for coil disconnections due to foreign material. • If the PBA control circuit is faulty, replace the PBA.	 ► DD MOTOR Check the resistance on the main PCB motor. (Between pins 1 and 3, and 1 and 4 of the four pins) - Resistance: Approx. 2 to 4 MΩ - Check the voltage when the power is on.
					 ► UNIVERSAL MOTOR Check the Resistance of No.1 and No. 4 of the wire pin on the side of the TACHO SENSOR. - Resistance: Approximately 40 to 45 Ω (Normal)
					 ► THREE PHASE MOTOR Measure the Resistance of No.2 and No. 3 of the wire pin on the side of the HALL SENSOR. - The revolution of the drum needs to be reproduced. (Turn the drum by hand.) - Resistance: Approximately 3 to 12V (Voltages may differ depending on the speed of the revolutions.)

Error Type	Error Mode		Causes	Corrective Actions	Description of Photo
	LED	LCD			
Water Supply Error	nF	Error! Low Water Pressure	• Water supply value fault • Main PCB fault • Freezing in the winter season	• If the water supply valve has a wire disconnected, replace it. • Check whether the water supply valve is clogged with foreign material and whether water is supplied continually. • Check whether no water is supplied because of freezing in the winter season. • If the PBA relay operates abnormally, replace the PBA.	  1. Check the resistance for the water supply valve. - Resistance: 4.0 to 5.0 Ω between the terminals of the Water Supply Valve. 2. Check whether there is foreign material in the water supply valve diaphragm.
Drain Error	nd	Error! No Draining	• Drain pump fault • Freezing in the winter season • Foreign materials in the drain pump • Main PCB fault	• Check whether the revolutions of the drain pump motor are restrained by foreign material. • Check the foreign material in hose-drain for the natural drain process. • Check the wire connectors on Main PCB and Drain Pump ASSY. The connector or wire may have poor physical connection. • If the drain pump operates abnormally or intermittently when the temperature of the water in the tub is high. • If the motor revolutions are restrained due to freezing in the winter season, check the method to remove the freezing and remove as directed.	 ► DRAIN MOTOR Resistance: Approximately 6.3 Ω between the terminals for the Water Supply Valve. ► DRAIN PUMP Resistance: Approximately 174 Ω between the terminals for the Water Supply Valve.

Error Type	Error Mode		Causes	Corrective Actions	Description of Photo
	LED	LCD			
Communication Error	-	Error! Electronic Control Problem	• The signals between the sub and main PBAs are not sensed. • Incorrect wire connections between the sub and main PBAs.	• Check the wire connections and terminal contacts between the sub and main PBAs. • Check for disconnected wires. • Check whether the sub PBA is short-circuited because of moisture. • If the main PBA's communication circuit is faulty, replace it.	-
Switch Error (Main Relay Error)	E2 Sr	Error! A button is either stuck or is being pressed continuously.	• The Power button is continually pressed. • A button other than the Power button is continually pressed. • Main PCB relay fault	• Check whether either the Power switch or a tact switch is continually pressed. • Check whether the service PBA holding screws are fastened too tight. If they are fastened too tight, loosen them a little. • If the main PBA switching IC on/off error has occurred, replace the main PBA. • The "E2" error occurs if the main relay connections are incorrect. Check the connections. If there is no error in the connections, replace the main PBA.	  Check the contact between the control panel buttons and their corresponding tact switch. - There must be a gap between a control panel button and its corresponding micro switch. Otherwise, an error occurs after approx. 30 seconds has passed.

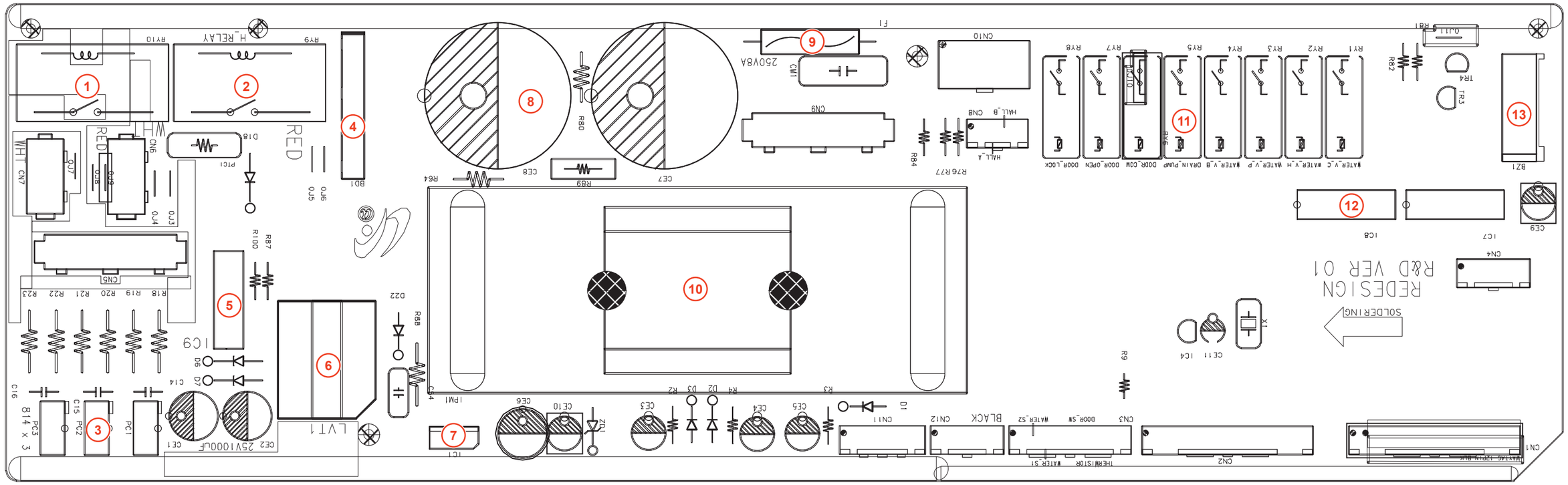
Error Type	Error Mode		Causes	Corrective Actions	Description of Photo
	LED	LCD			
Door Error	dS	Error! Door is open.	• Door switch fault • Drain pump fault • Dry duct fan motor fault. • Main PCB fault	• If a dS error occurs, check whether it occurs during the Boil cycle. - If it is detected that the door is open, close the door. • The 220V is directly connected to the door. Check and repair the power wire connections and insulation state. • Check the door switch. Replace if faulty. • Check the main PBA door sensing circuit. Replace if faulty.	 ► TYPE 1 Check the door switch voltage. Check the voltage after the power is on. (That is, check the door switch when the power button is turned on and no operating key is pressed.)
	dL	Error! The door was unlocked while the washer was running.			
	LO	Error! The door will not unlock.			 ► TYPE 2 The resistance across No. 3 and No. 5 of the DOOR LOCK SWITCH must be approximately 949 Ω.
	FL	Error! The washer door would not lock.			
Heater Error	Hr	Error! Water Temperature Control Problem	• Heater fault • A fault of the red temperature sensor at the center of the dry heater • Steam function fault • Freezing in the winter season	• Check for wires are disconnected in the washing heater. Replace if faulty. - An Hr error occurs. • If the dry heater or air refresh heater overheating sensor is faulty, replace it. - An Hr error occurs. • Check the steam heater. Replace if it is faulty. - An Hr error occurs.	-

Error Type	Error Mode		Causes	Corrective Actions	Description of Photo
	LED	LCD			
Water Leakage Error	LE	Error! Water Leakage Problem	• Check for any leakage. • Foreign material in the DV case • Fault of a hose or incorrect part engagement in the product	• Check for any leakage on the base, Hose, Valve and Tub connections and take any required action. • During natural draining, this error occurs when the drain bellows are clogged with foreign material. Remove the foreign material. • Check the drain motor operation. Replace if it does not operate normally.	  ► DRAIN PUMP TYPE (Automatic Drainage) Check whether there is any foreign material in the bellows. Check for any foreign material, such as underwear wires or coins.  ► PUMP TYPE Check for any leakage on the base, Hose, Valve and Tub connections.
Overflow Error	OE	Error! Water Supply Problem	• Water level sensor fault • Freezing in the winter season	• If the water level sensor has a functional error, replace it. • Check the hose. This error occurs if it is torn or has a hole. • This error occurs if water is frozen in the winter season. Use hair dryer to defrost hose. Consider relocating the unit to warmer location.	 Check the hose connected to the water level sensor. Check whether the hose is folded, cut, or damaged.

Error Type	Error Mode		Causes	Corrective Actions	Description of Photo
	LED	LCD			
Temperature Sensor Error	tE	Error! Temperature Sensor Problem	• Washing temperature sensor fault • Dry temperature sensor fault • Faulty and incorrect connections of the dry condensing sensor • Main PCB fault • Freezing in the winter season	• Check the connections for the washing heater temperature sensor connector. • If the washing heater temperature sensor has a functional error, replace it. - A tE error occurs. • Check the connections for the dry heater temperature sensor connector. • If the dry heater temperature sensor has a functional error, replace it. • Check the connections for the duct condensing temperature sensor connector. • If the duct condensing temperature sensor has a functional error, replace it.	-
Unbalance Error	dc	Error! Unbalanced Load	• Motor hall sensor fault • Caused by the laundry contents	• Check the type of laundry. Check whether it may cause an unbalanced situation. - Educate the consumer in this case is to press pause reposition the load or remove a few items. Press start to continue and complete the wash cycle.	-

5. PCB DIAGRAM

5-1. MAIN PCB



Location	Part No.	Function	Description
1	RY10	Main Relay	Main Power Relay
2	RY9	Heater Relay	Heater Relay
3	PC1~3	Check circuit	• Check for the Frequency • Make the Zerocross • Door Lock Check
4	BD1	Making DC Voltage	It Work to Change the AC to the DC
5	IC9	Switching IC	Making a stable DC
6	LVT1	Trans circuit	Chopping the DC Link
7	IC1	Regulating circuit	Regulation for the 5V

Location	Part No.	Function	Description
8	CF7, 8	Charging Voltage	Charge the DC LINK (300V)
9	FUSE1	Fuse	Limit the Over-Current
10	IMP1	Part number : IMP1 -> IPM1, MOTOR Control	Control to Motor
11	RY1~8	Load Control	Turn On/Off the Load (Valve etc.)
12	IC7, 8	Driving Circuit	• Drive the Relay • Supply the Current to the Acting Current
13	BZ1	Buzzer Circuit	Making a Sound

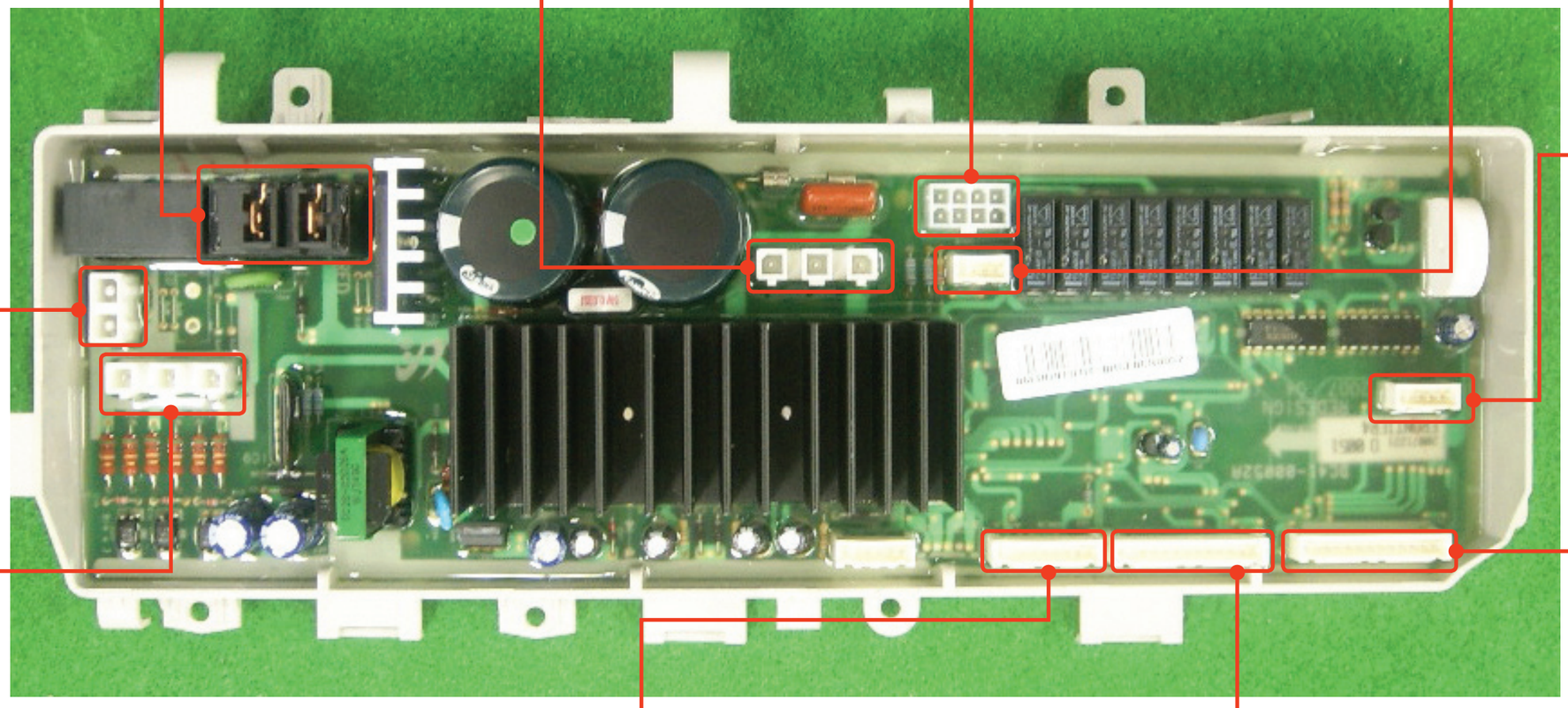
5-2. DETAILED MANUAL FOR CONNECTOR AND RELAY TERMINAL PART - (MAIN PCB)

► **Relay 9**
1. Connects to Washing Heater
2. Connects to EMI Filter (Remove the Noise/AC2)

► **CN9**
1. Connects to Motor (U Phase)
2. Connects to Motor (V Phase)
3. Connects to Motor (W Phase)

► **CN10**
1. Connects to Main Valve
2. Connects to Hot Valve
3. Connects to Pre Valve
4. Connects to Bleach Valve
5. NC
6. Connects to Drain Pump
7. Connects to Door Lock Switch (For the Close)
8. Connects to Door Lock Switch (For the Open)

► **CN8**
1. Connects to Hall Sensor (Vcc)
2. Connects to Hall Sensor (Signal B)
3. Connects to Hall Sensor (Signal A)
4. Connects to Hall Sensor (Ground)



► **CN4**
1. Connects to AG PBA (I_H)
2. Connects to AG PBA (PWM)
3. Connects to AG PBA (AG A)
4. Connects to AG PBA (AG B)
5. Connects to AG PBA (Ground)

► **CN7**
1. Connects to AG Kit (Supply for the power)
2. Connects to Door Lock Switch (For the Safety)

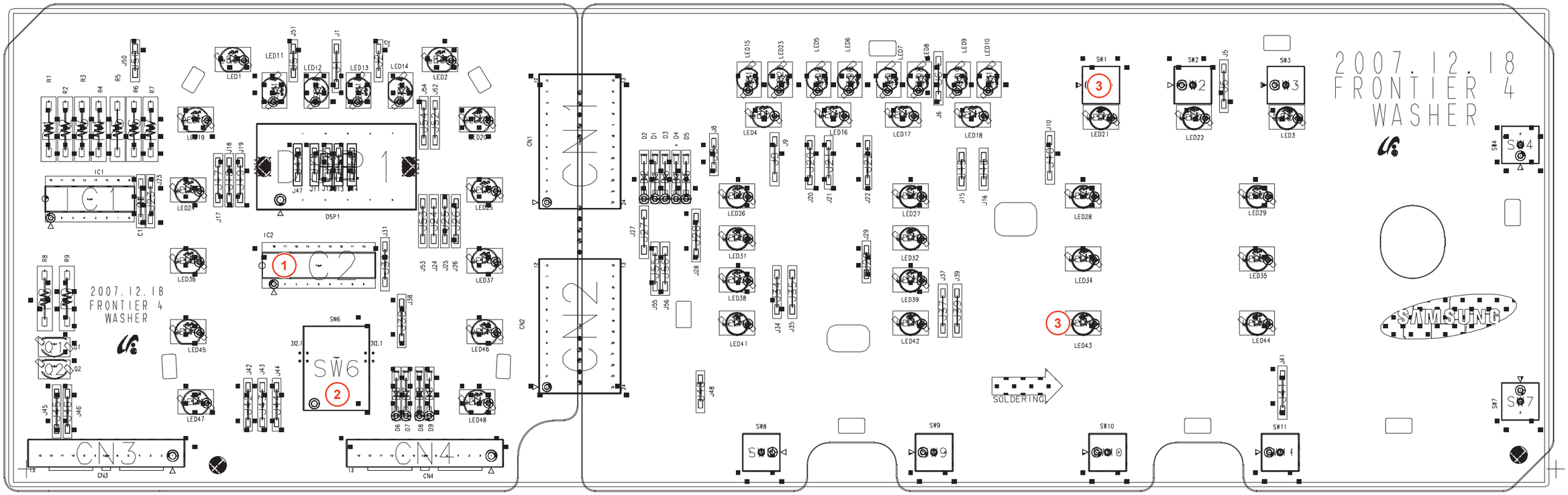
► **CN5**
1. Connects to EMI Filter (Remove the Noise/AC1)
2. NC
3. Connects to Relay 9

► **CN1**
1. NC
2~10. Connects to Main PBA (Seg1~9,13/In Regular Sequence)
11. Connects to Main PBA (Option Key)
12. Connects to Main PBA (Vcc)
13. Connects to Main PBA (Ground)

► **CN3**
1. NC
2. NC
3. Connects to Water Temperature Sensor
4. Connects to Door Lock switch (Door Open/Close Sensor)
5. Connects to Ground
6. Connects to Ground
7. Connects to Water Level Sensor (Signal A)
8. Connects to Door Lock Switch (Signal B)
9. Connects to Ground

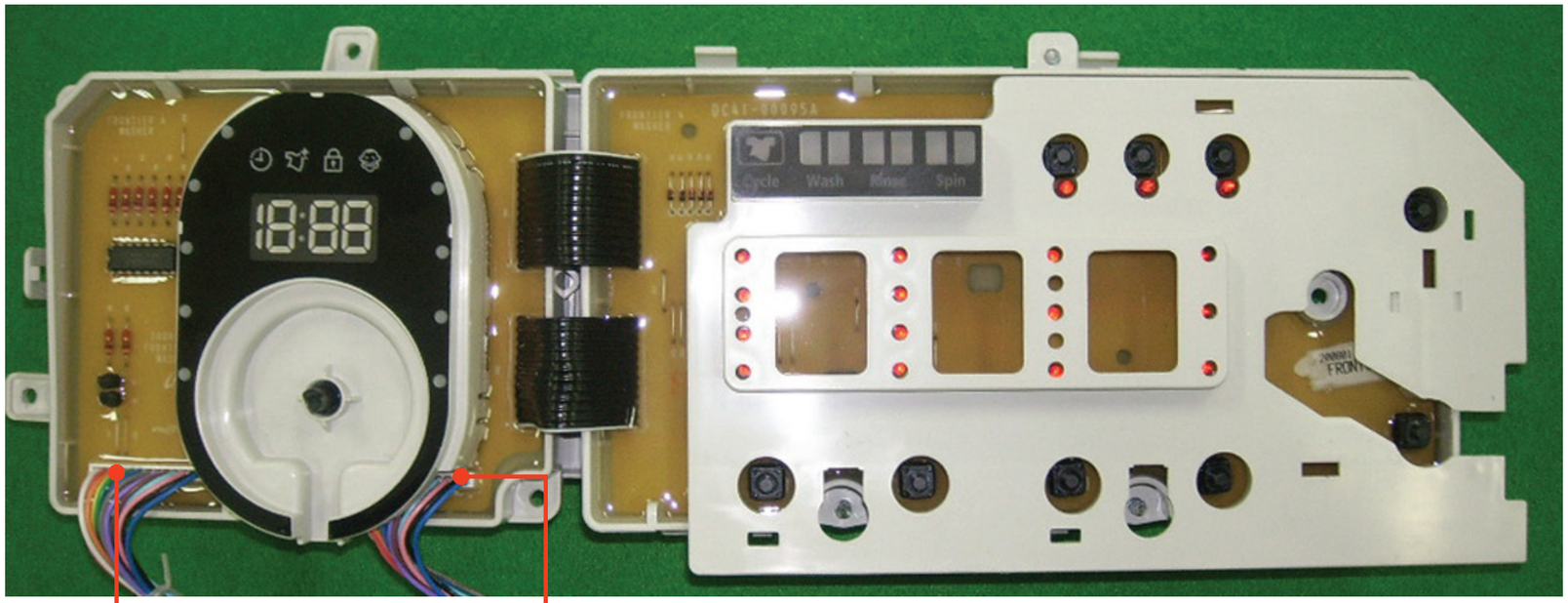
► **CN2**
1~8. Connects to Main PBA (Digit Signal 0~7 / In Regular Sequence)
9. Connects to Main PBA (Key1)
10. Connects to Main PBA (Key2)
11. Connects to Main PBA (Rotary Switch A)
12. Connects to Main PBA (Rotary Switch B)
13. NC

5-3. SUB PCB



Location	Part No.	Function	Description
1	IC1~2	Signal Driving circuit	Drive the LED & Display Supply the Current to the Acting Current
2	SW6	Course select	Rotary Switch (For the Selecting a Course)
3	LED & Key	Input & Display DATA	Input the Detail Course Display the Resent Course

5-4. DETAILED MANUAL FOR CONNECTOR TERMINAL PART (SUB PCB)



► **CN1**

1. Connects to Main PBA (Ground)
2. Connects to Main PBA (Vcc)
3. Connects to Main PBA (Key 1)

4~13. Connects to Main PBA
(Seg1~9,13/In Regular Sequence)

► **CN2**

1. Connects to Main PBA (Seq0)
2. Connects to Main PBA (Rotary Switch A)
3. Connects to Main PBA (Rotary Switch B)
4. Connects to Main PBA (Key2)
5. Connects to Main PBA (Key3)

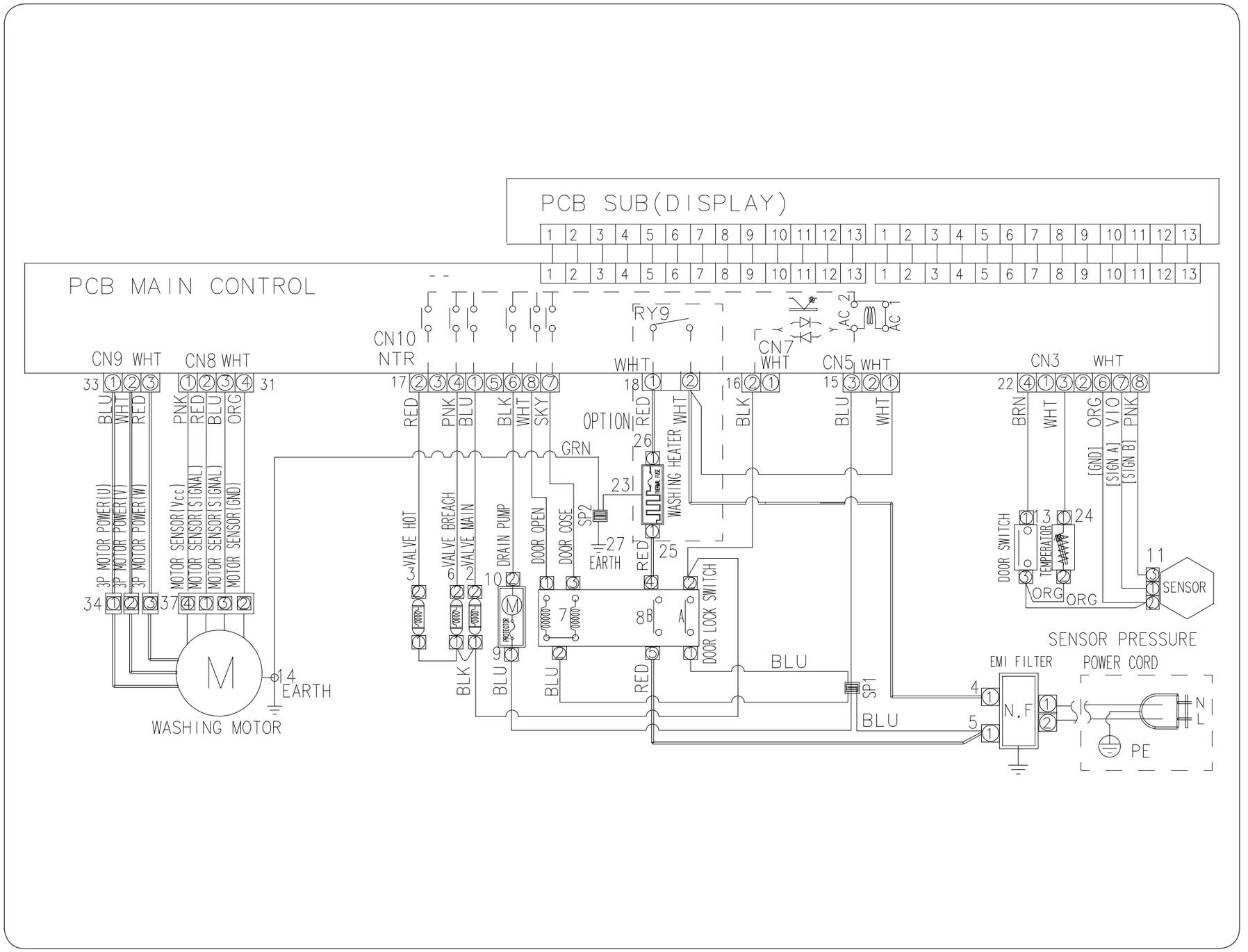
6~13. Connects to Main PBA
(Digit Signal 0~7 / In Regular Sequence)

6. WIRING DIAGRAM

6-1. WIRING DIAGRAM

■ REFERENCE INFORMATION

BLK	BLACK
BLU	BLUE
GRN	GREEN
GRY	GRAY
NTR	NATURAL
ORG	ORANGE
PNK	PINK
RED	RED
SKYBLU	SKYBLUE
VIO	VIOLET
WHT	WHITE
YEL	YELLOW



7. SCHEMATIC DIAGRAM

7-1. MAIN CONTROL

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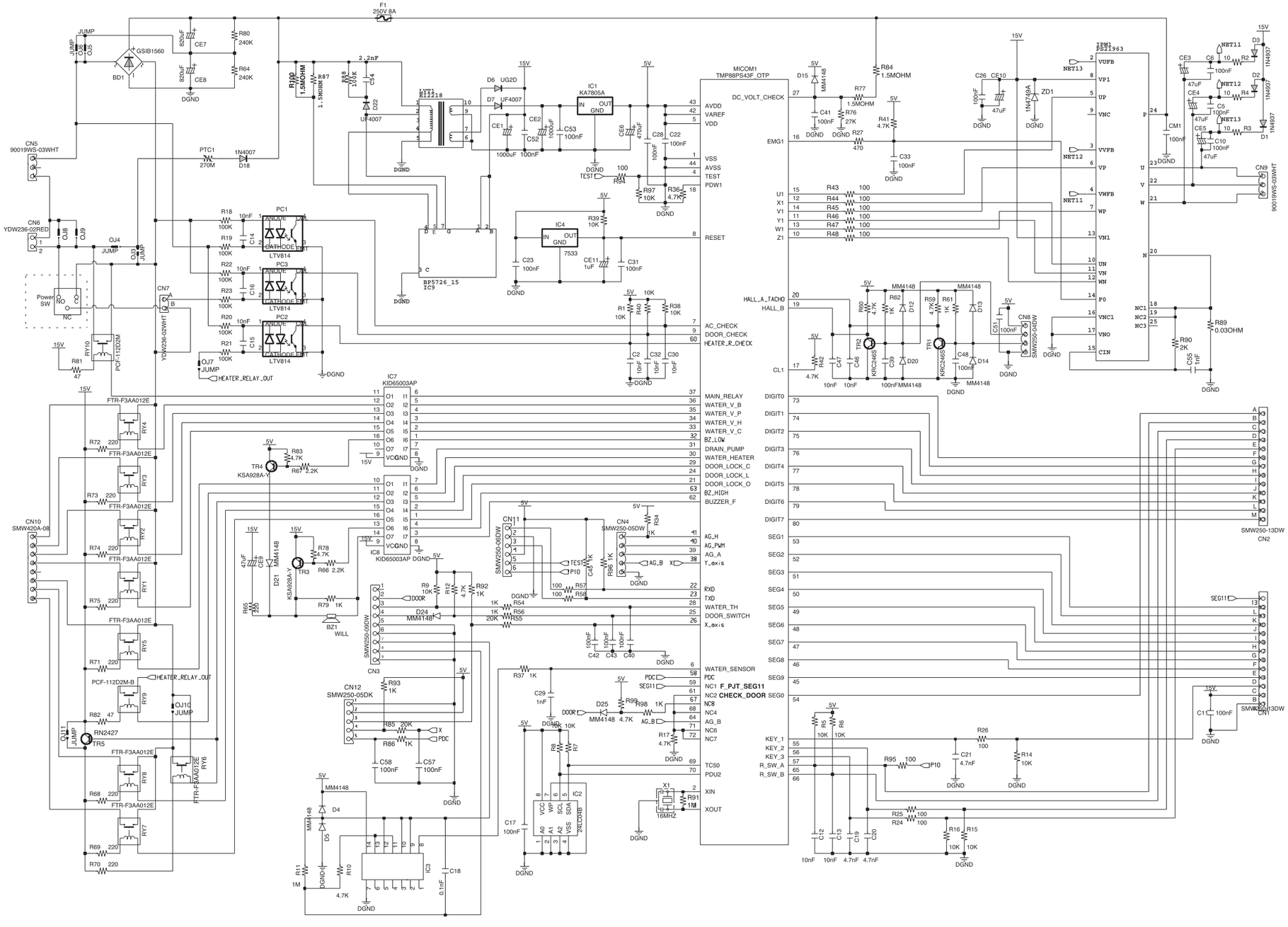
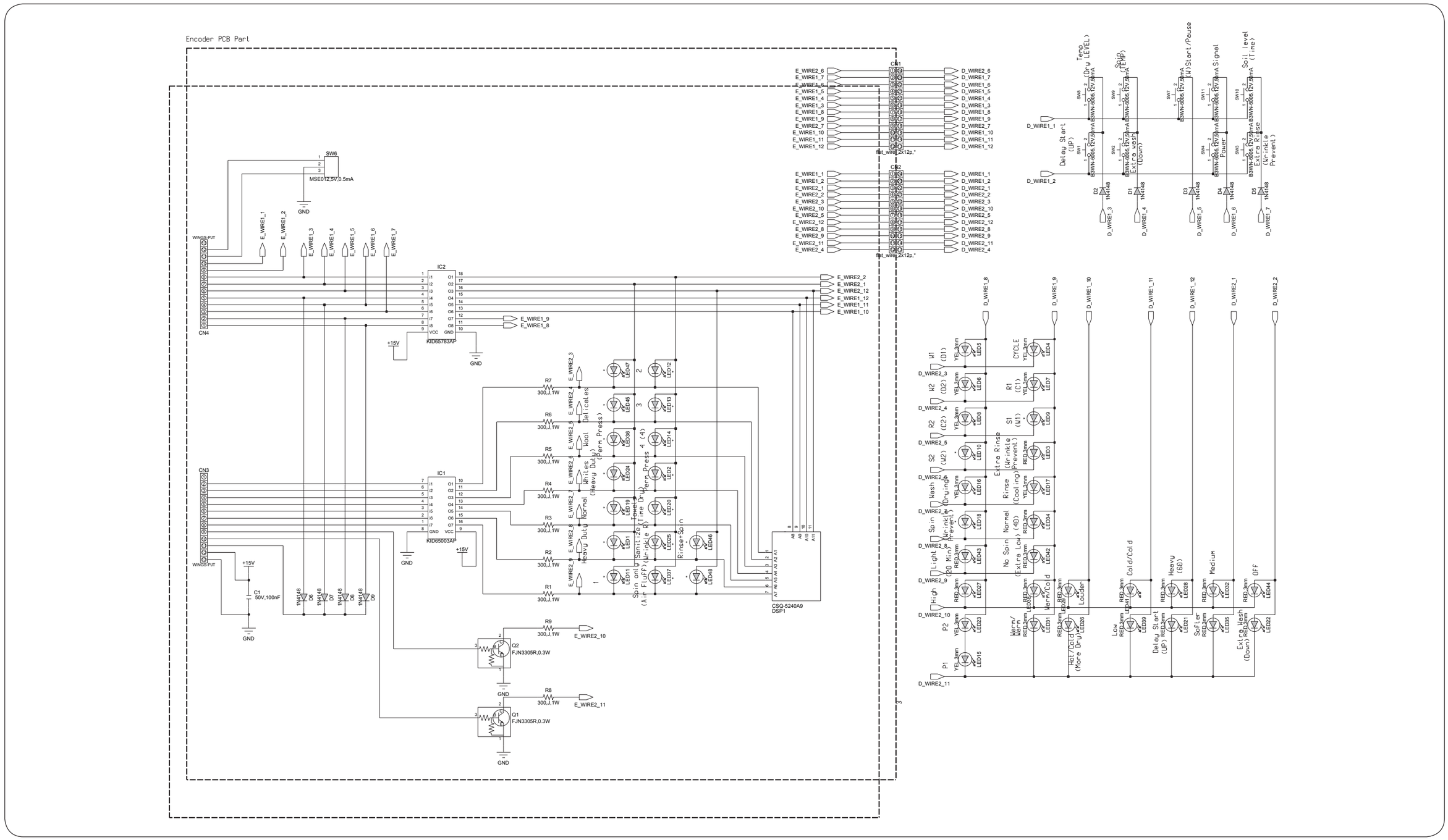


7-2. SUB CONTROL

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